

New Hampshire River Herring Stock Designation Information

River Herring Stock Structure Meeting, June 20-22, 2012

NMFS Northeast Regional Office, Gloucester, MA

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New Hampshire River Herring Dataset:

- Annually since 1972 (more complete 1978+, most reliable 1985+)
- Spawning run only
- Head-of-tide dams w/ associated fish ladders
- Varied methodology for estimation:
 - Time counts expanded for season (*earliest years*)
 - Time counts expanded for days, cumulative for season
 - Hand counts
 - Hand counts and electronic counting tubes (*recent years*)
- Biological Information
 - Age frequency, length at age, species distribution from scale samples
 - Length Distribution (and species distribution since 2010) from Random samples beginning, middle, end of run

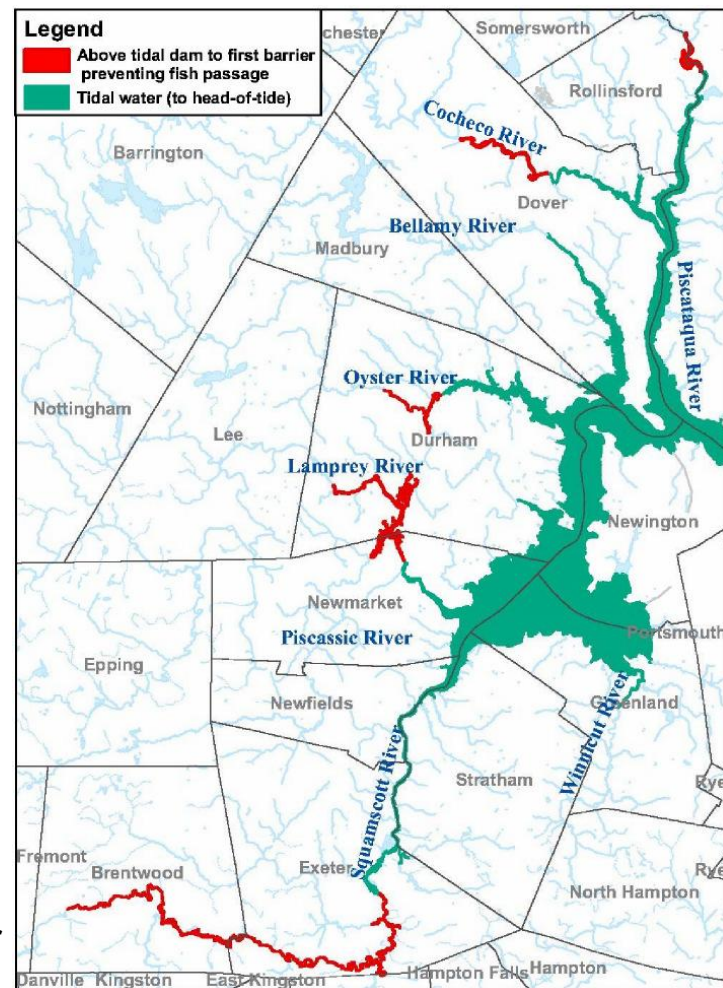
NH Stock Designation

– Within New Hampshire

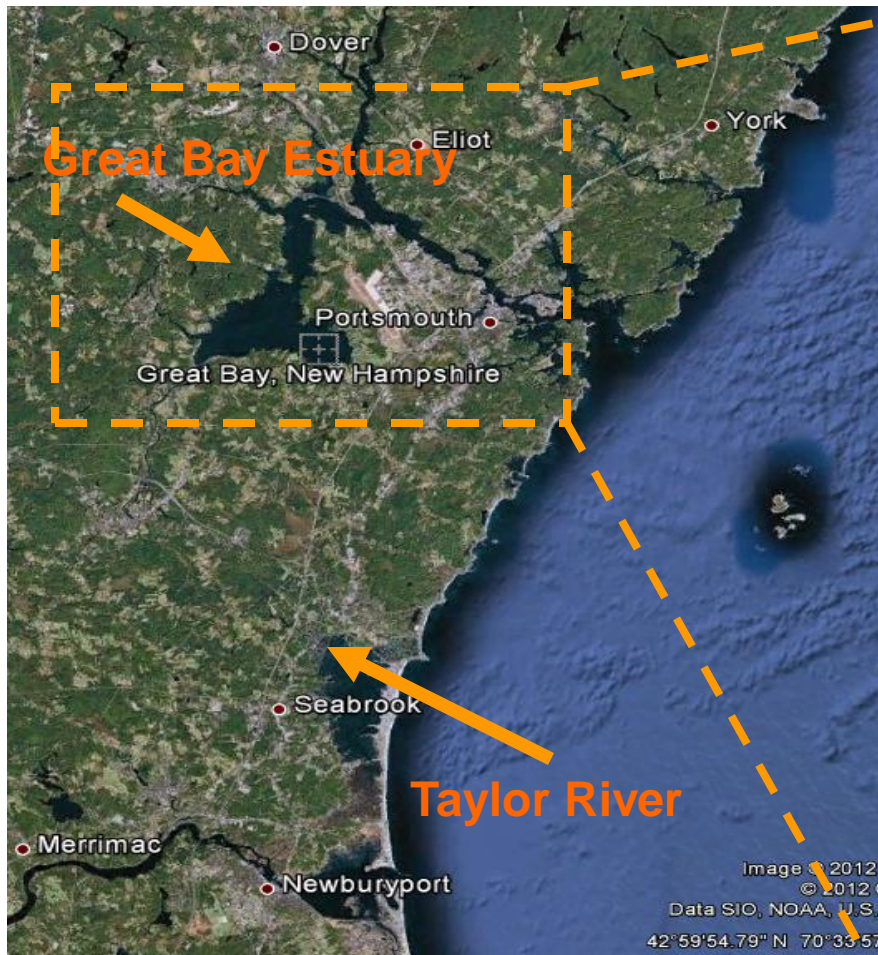
- 6 Major coastal rivers
 - Cocheco
 - Exeter
 - Oyster
 - Lamprey
 - Winnicut
 - Taylor
 - » (only river not in Great Bay Estuary)

– Outside of New Hampshire

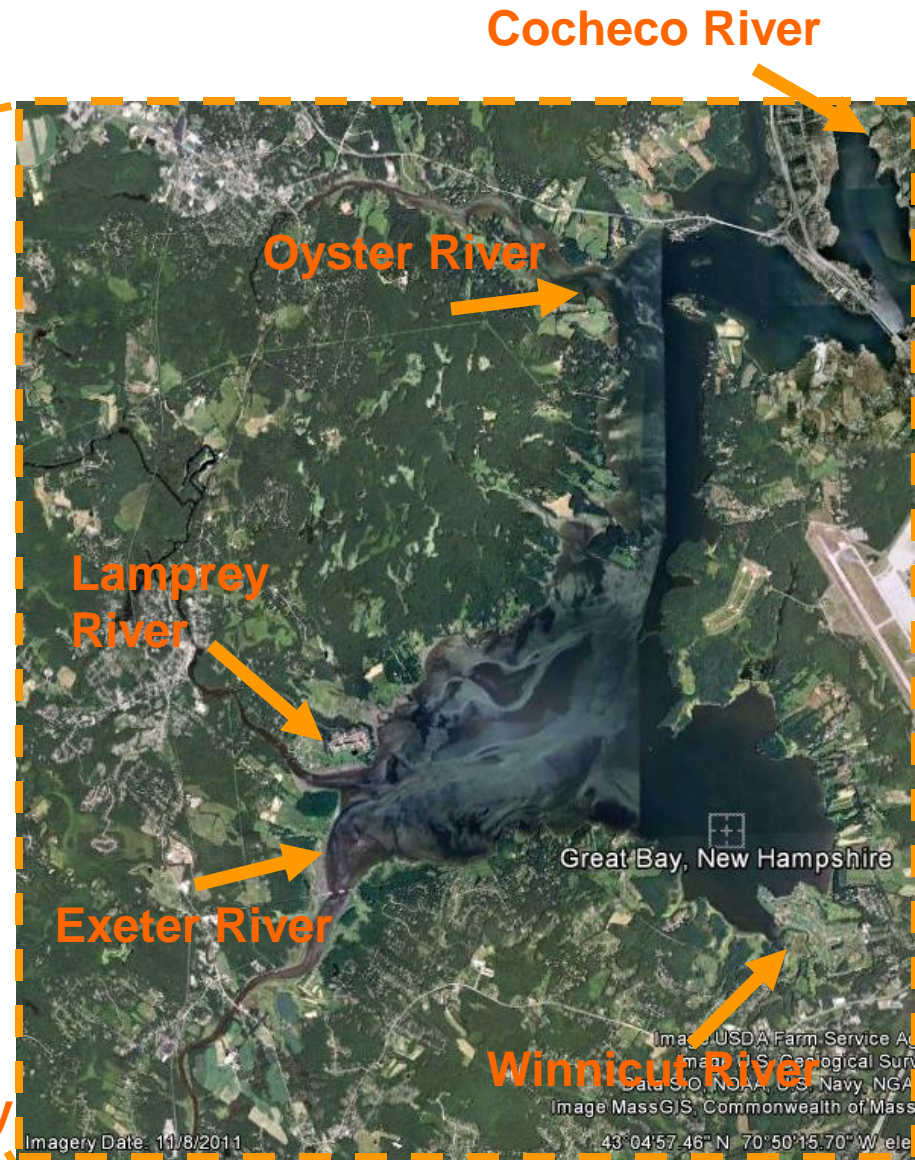
- No data to comment on a stock structure or designation outside of NH state waters



Location of Rivers



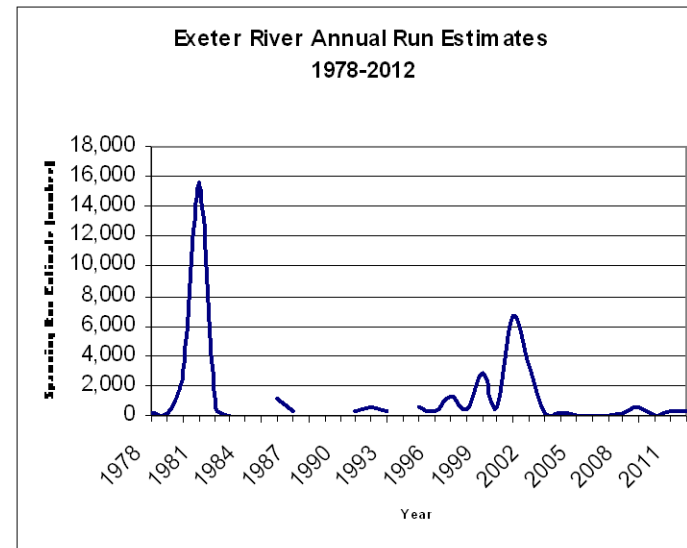
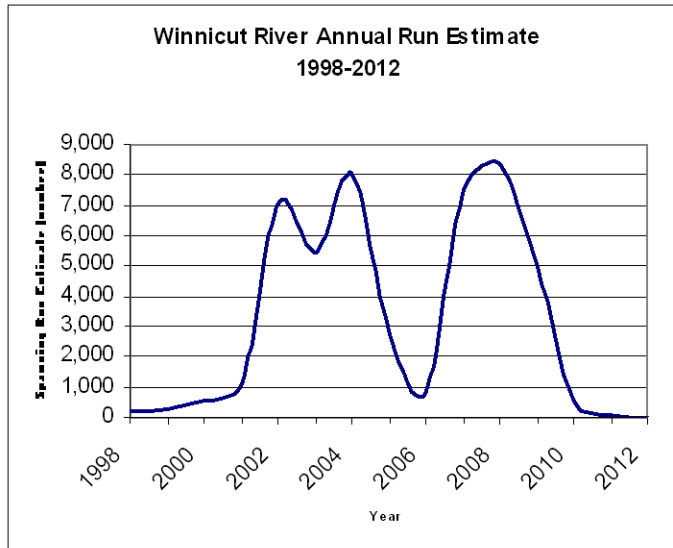
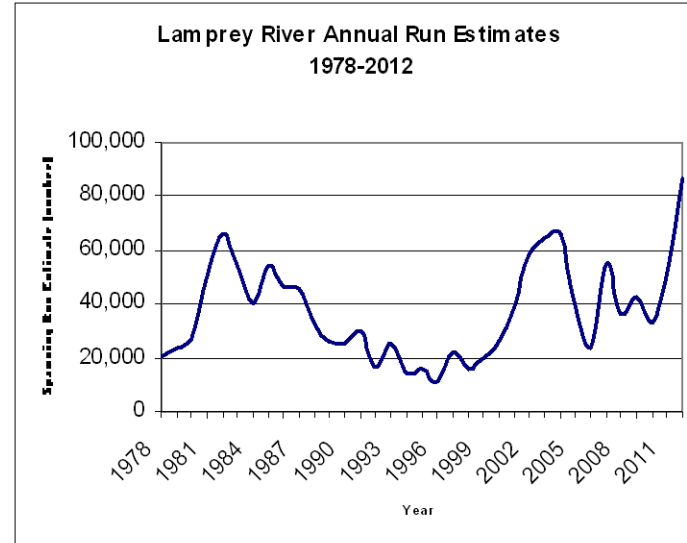
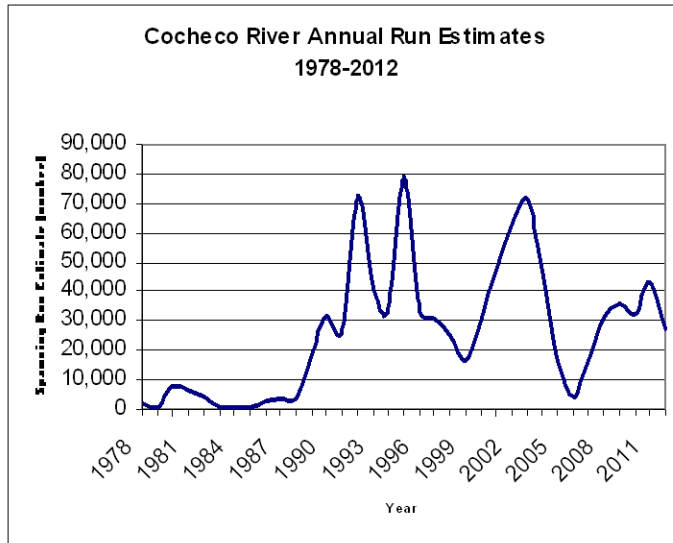
(1,000 yards between Lamprey and Exeter River mouths)



NH Stock Management

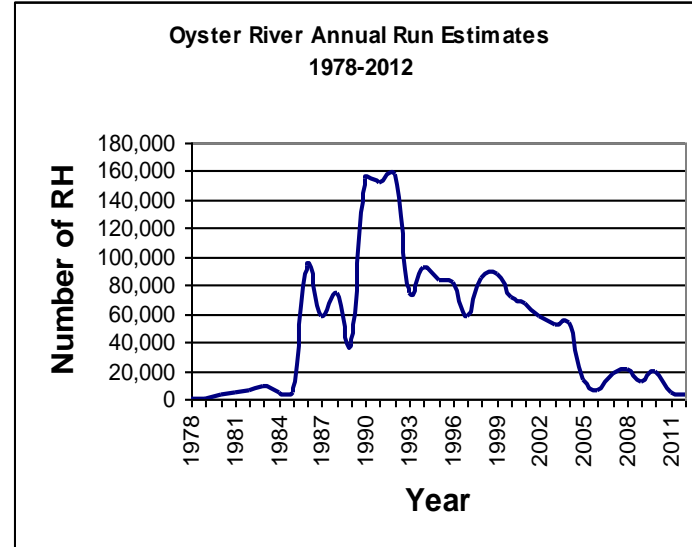
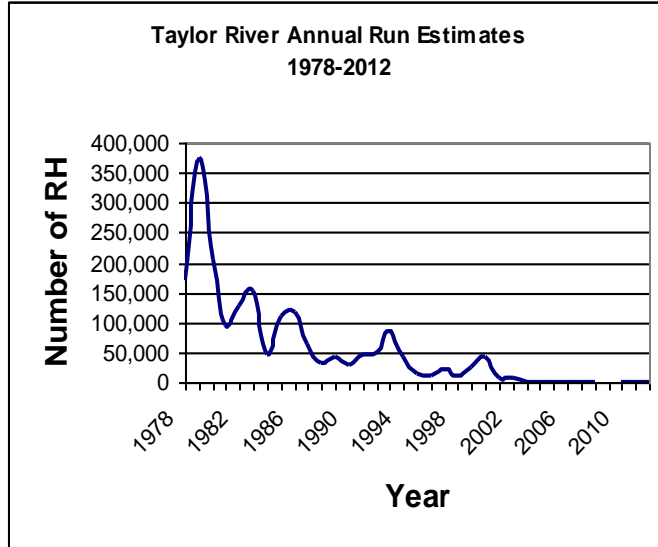
- Historically managed statewide as single stock
- Both species (A & BB) combined as 'River Herring'
 - No species differentiation for management to date
 - River-species specificity has inadvertently managed by species
- Each river is monitored as an independent stock
 - Rules/Regulations are statewide and/or river-specific
 - Management is conducted in-river during spawning run by possession limit for netters
 - Little to no harvest outside of river within state jurisdiction
 - NH does not inspect or sample federal landings for river herring as bycatch in commercial fisheries

Annual Spawning Run Estimates



Annual Spawning Run Estimates

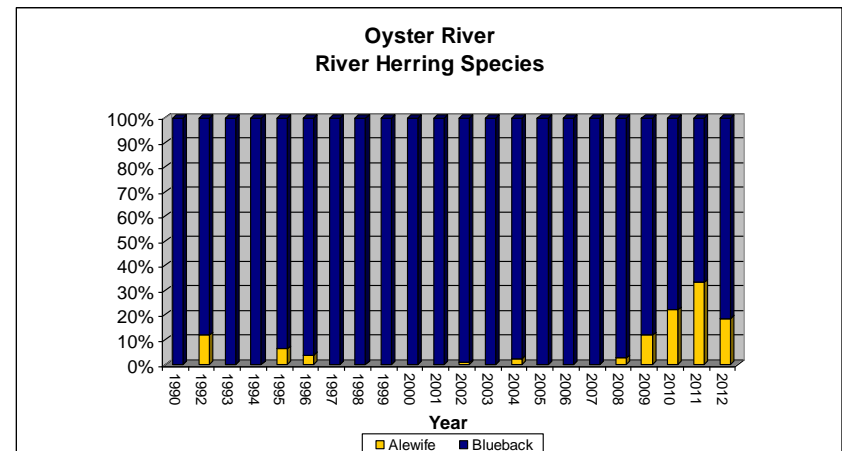
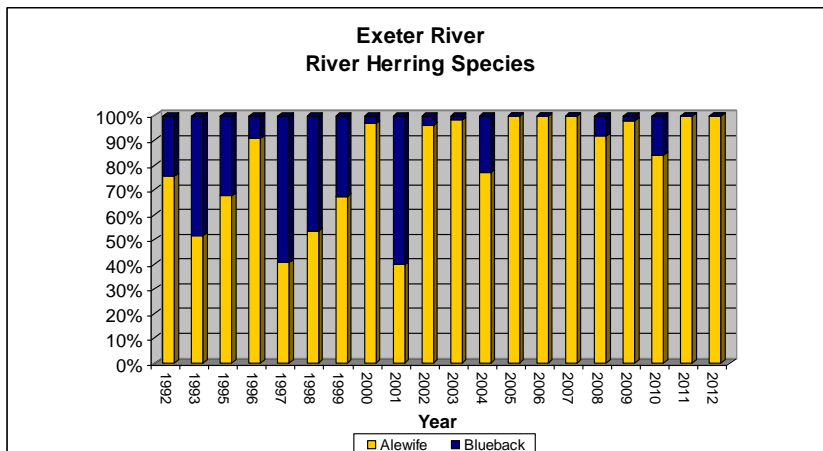
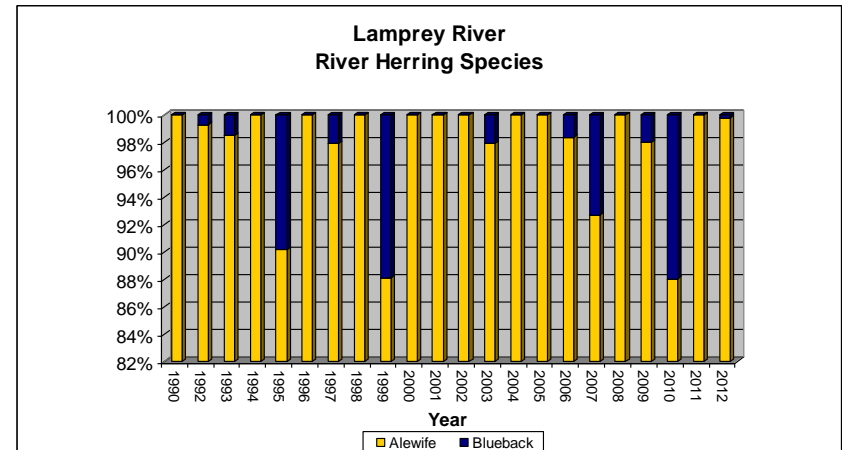
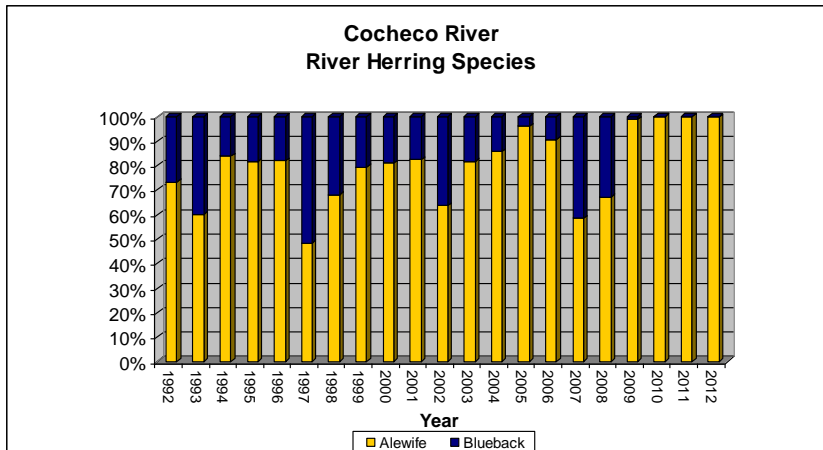
(Cont.)



(Spawning runs dominated by blueback herring)

River Herring Species by River

Species Data Collection began in 1990

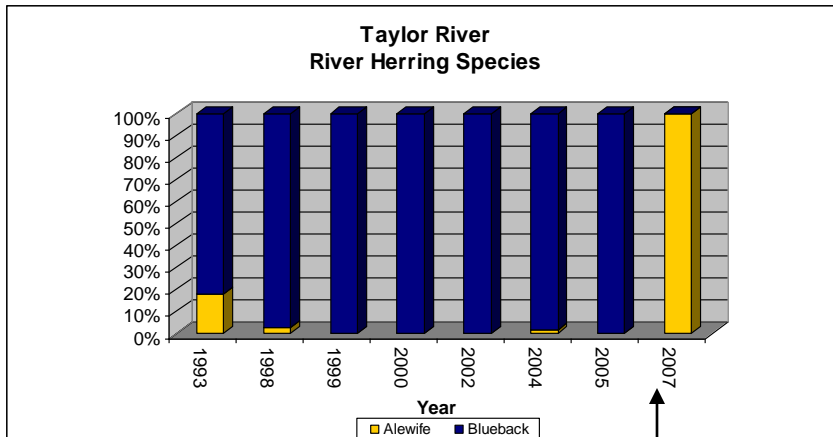


1992 to 2012

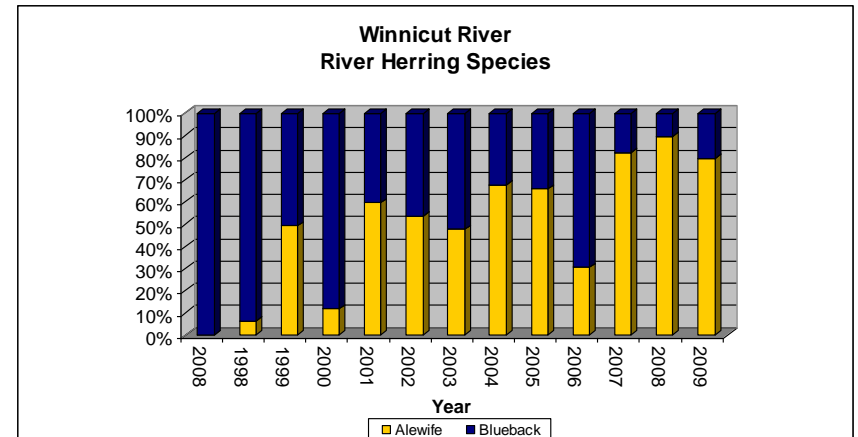
1990 to 2012

River Herring Species by River

(Cont.)

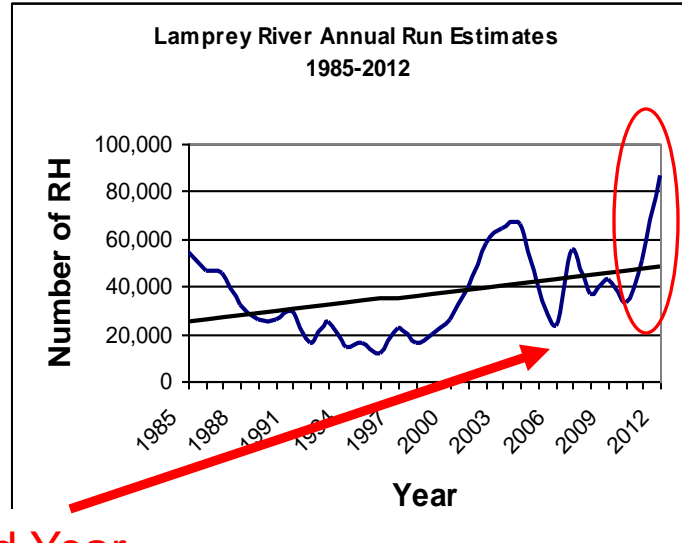
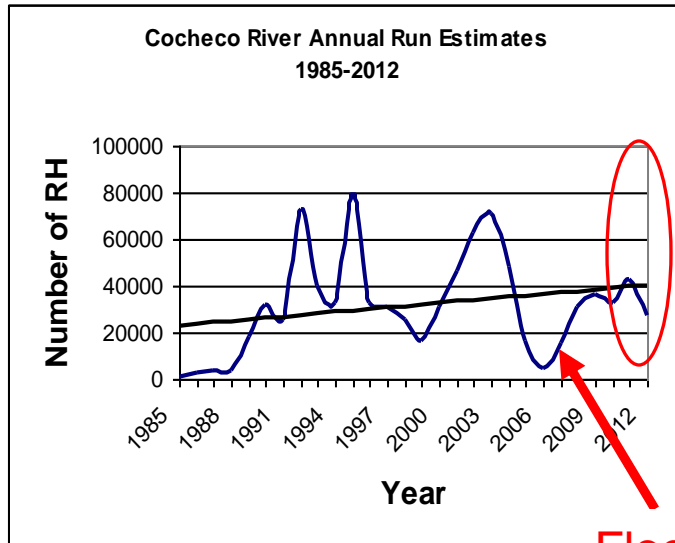


11 fish in 2007

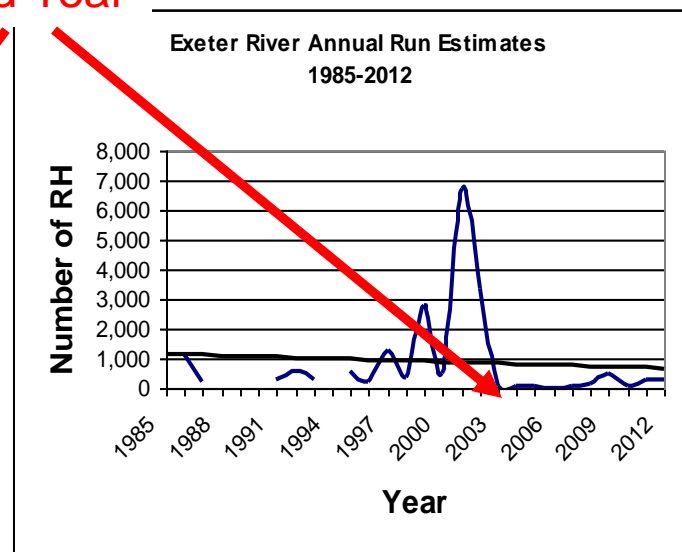
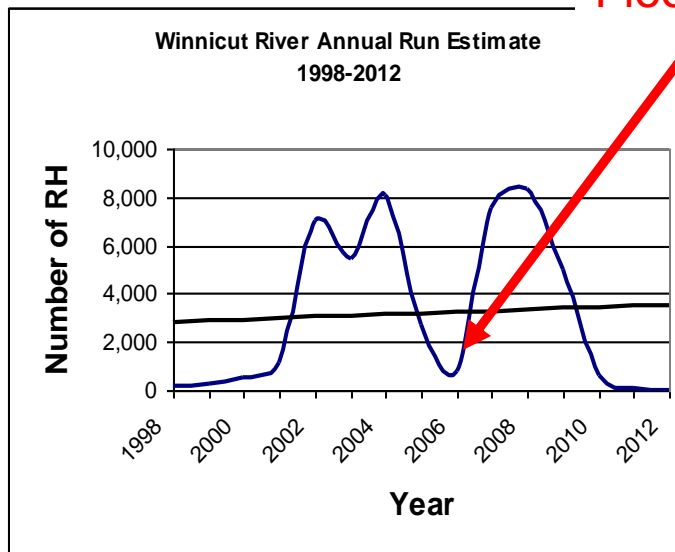


Annual Spawning Run Estimates

Most Reliable Time Series



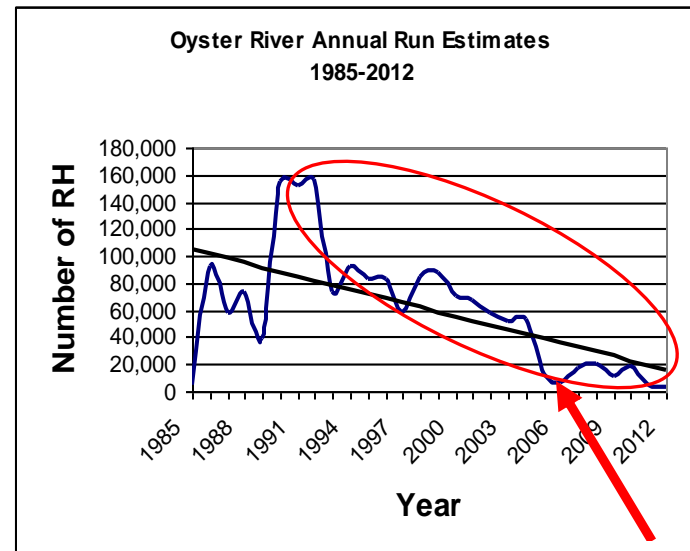
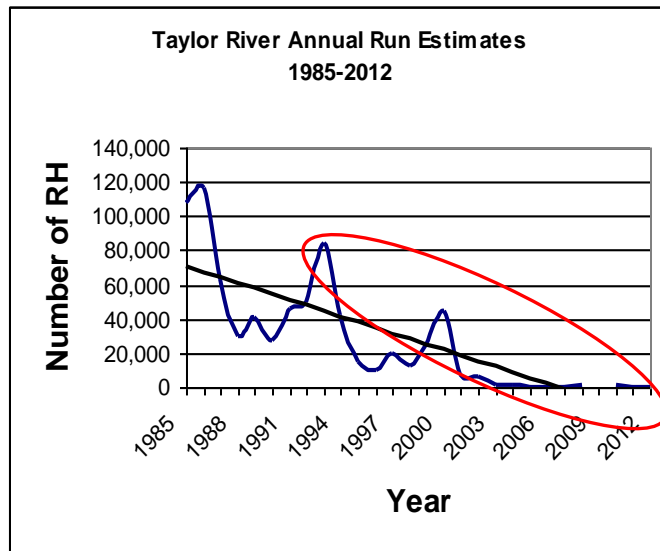
Flood Year



Annual Spawning Run Estimates

Most Reliable Time Series

(Cont.)

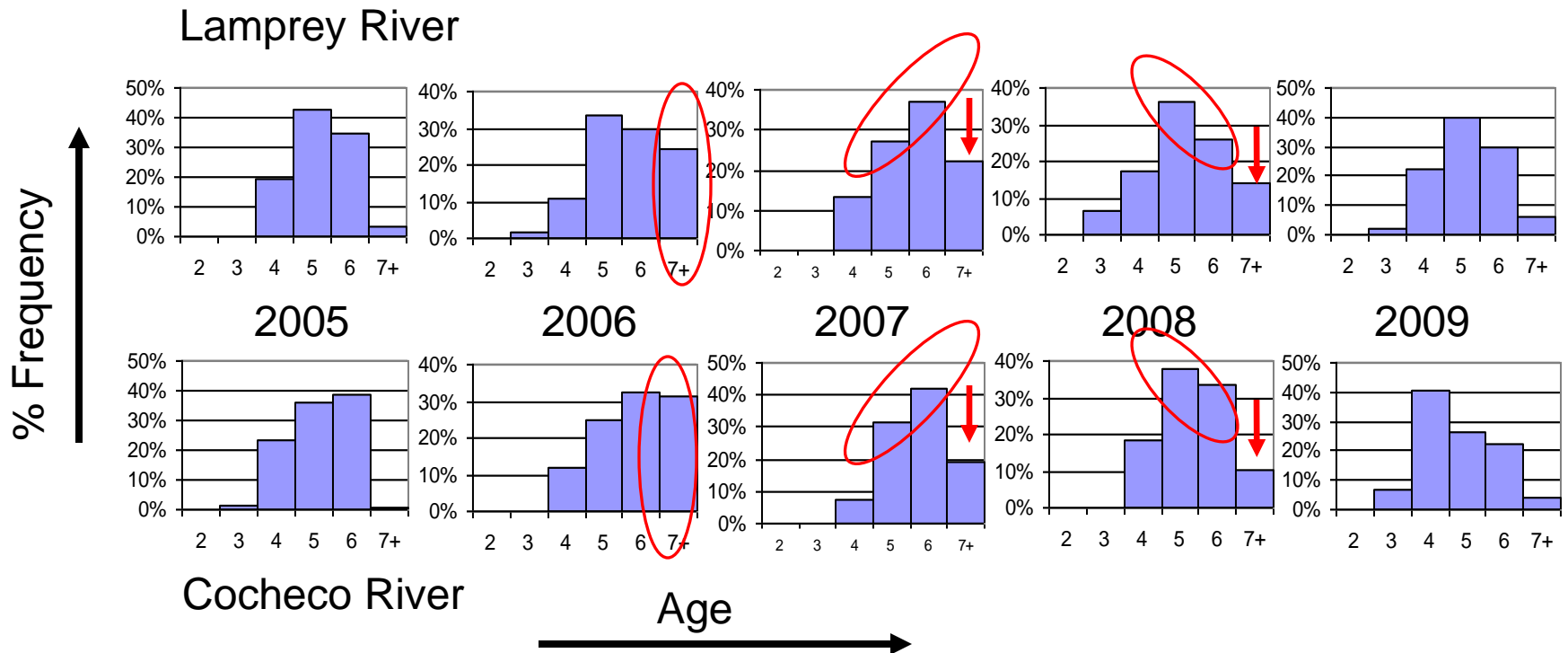


Flood Year

(Spawning runs dominated by blueback herring)

Age Frequency Across Rivers

Alewife Runs



Suggestions of Stock Designation Between Species:

– Within-River Diversity

- Historically some diversity within rivers
- Shifted to single species dominance in alewife runs
- Blueback dominated runs have shown increase in alewife proportion and overall decline in total run size

– Run Timing

- Alewife arrive generally April 20 to May 1
- Blueback arrive generally 2 to 3 weeks following
- Some overlap, but minimal

– Return Numbers

- Alewife dominated runs fluctuate but oscillate around average levels (Cocheco, Lamprey)
- Blueback dominated runs have crashed/crashing or nearly extirpated (Oyster, Taylor)

Suggestions of Stock Designation Between Rivers:

- Return Numbers
 - Run size varies annually across rivers, but fairly independently
- Run Timing
 - None
 - Alewife runs across rivers start nearly simultaneously
 - Blueback runs later, and minimal in most recent years
- Between River Age Distributions
 - None. Similar across rivers with same species dominance
- Between River Length Distributions
 - None. Varies inter-annually across rivers, but similar across rivers within year
 - Follows age distributions